Sammamish River Action Plan
January 2002
Abstract
Merri Martz

The Sammamish River Corridor--defined in the Action Plan as the River and its historic floodplain, including tributary confluence areas--has significant potential to support native fish, birds and other wildlife, and to serve the surrounding human community, much better than it does today. Over the past century and more, major alterations to the river corridor were made with little thought to the ecological harm they would cause. This plan acknowledges that it is impossible to re-create historic conditions; it nevertheless identifies a suite of actions that could benefit native fish, birds and other wildlife enormously. To help governments and others meet legal requirements based on listings under the Endangered Species Act, the plan focuses especially on the Sammamish River's role as a necessary migratory corridor for all anadromous salmon in the Sammamish Watershed. But implementation of the plan would benefit more than salmon, and more than just a wide range of other wildlife; it would also enhance the river corridor's ability to serve as a place of pleasure and refuge for the surrounding human community.

To develop the Action Plan, both historic and existing conditions in the Corridor were evaluated. The historic Sammamish River Corridor was a place of vast wetlands, numerous meandering and braiding channels, and old growth forests. The frequent flooding made it nearly uninhabitable by humans, except during the dry season. The extremely complex system of emergent, shrub and forested wetlands and multiple channels provided tremendous rearing opportunities for salmon species, and ideal habitat for large and small mammals and birds. It is likely that the only limiting factor to fish production in the historic River was the lack of a large river or stream tributary to the system that had extensive spawning grounds. Bear Creek is the largest tributary to the system. All other aquatic and floodplain habitat types were present in abundance.

Significant human-induced changes have been wrought in the Sammamish River Corridor since Europeans began to settle in the area in the 1880s. Lake Washington was lowered 9 feet, and Lake Sammamish by 6 feet when the Locks were built; the vast forested areas of the valley and hillslopes were logged; the River was confined to one channel and wetlands were drained for agriculture; the River was further constrained more recently for flood control in the 1960s and now has no riparian zone and uniform aquatic habitat. The current conditions in the Sammamish Corridor are severely degraded and have resulted in a decline in many fish and wildlife populations. Aquatic habitat area has been reduced by more than half (as estimated by river length; originally ~30 miles, now less than 14 miles in length), and the remaining habitat is uniform, predominantly glide habitat. Natural plant communities are rare in the corridor and are completely changed from the historic forested swamp conditions. Typically, the only native species that are doing well are highly adaptable to altered conditions, such as cutthroat trout. However, it appears no native fish species have yet become extinct in the watershed,

although many wildlife species have been extirpated. A total of seven salmon species are known to be present in the north Lake Washington watershed, and of those, one is listed as threatened (chinook), one is petitioned to be listed as endangered (kokanee), three are depressed (coho, steelhead, and sockeye), and two have unknown status (bull trout and coastal cutthroat) (GLWTC, 2001).

Of particular concern are the existing water quality problems in the River. High water temperatures present near lethal and occasionally lethal conditions for salmon; typically during the adult upstream migration period. This is the singlemost important limiting factor to salmon survival. Additionally, the existing habitat provides no opportunities for refuge or cover for either adult or juvenile salmon and instead benefits non-native fish and plant species. This severe degradation has led natural resource managers in the past to dismiss the Sammamish River as a hopeless situation, however, in this Action Plan we present several strategies to restore ecological functioning to the Corridor.

The Action Plan views the Sammamish River Corridor's most important ecological role as a link between other habitats. Most obviously, it is a link between Lake Washington and Lake Sammamish, but it also links major tributaries and upland habitats with each other and with the lakes. Many species beside salmon use it as a critical migratory corridor. The fundamental goal of the Action Plan is to make the Sammamish River Corridor a strong link, rather than a weak one, in this larger ecosystem. To meet this goal, the plan recommends the following overarching strategies:

- Restore riparian areas throughout the river corridor, to provide shade, cover and enhanced habitat for all native fish and wildlife;
- Create and enhance pools in the river channel, to provide cool-water refuges and cover, particularly for migrating adult salmon;
- Explore engineered solutions to cool the river upstream of Bear Creek, to reduce thermal stress for migrating adult salmon where it is greatest;
- Protect all major tributaries to the river, particularly Bear Creek, as sources of cool water for the river and as habitat for other life stages of fish and wildlife using the river; and
- Apply adaptive management systematically across jurisdictions, monitoring projects closely compared both to each other and to baseline conditions, to identify features of greatest value to include in future projects.

Many programmatic and site-specific recommendations were considered in order to implement these strategies. The most important large-scale projects are considered “core” recommendations. These recommendations must be implemented in order to restore a reasonable level of ecological functioning to the Corridor and address the most serious problem, high water temperatures. Additional site-specific recommendations of high priority are also considered essential to make the migratory corridor functional. The non-core and medium to lower priority recommendations will provide important habitat features to make the Corridor complete and well-connected and will address other limiting factors in the watershed, but are rated as lower priority because they will either take additional studies and several years to implement, or they primarily address only

localized conditions. A relative scale of cost is also indicated for each recommendation. Low cost is less than $100,000; medium cost is $100,000 to $1 million; high cost is $1 million to $5 million; and very high cost is more than $5 million.

Table 1. Core and High Priority Recommendations.

Core Recommendations	**Potential Lead Implementing Agency**	**Relative Scale of Cost**
P1. Restore Riparian Araes Throughout The Entire River Corridor	King County/Corps	Very High
P2. Create and Enhance Pools in the River Channel	King County/Corps	High
P3. Protect and Improve Buffers Along the River, Tributaries and Wetlands	King County/Cities	Low (primarily regulatory)
P4. Explore Engineered Solutions to Cool the River Upstream of Bear Creek (Reach 6)	Corps/King County	High
P5. Increased Water Conservation in the Sammamish Watershed (Particularly the Bear Creek Basin)	Cities/WDOE/King County	Medium/High
P6. Acquisition of Existing High-Value Habitats or Areas With High Likelihood of Restoration Success	King County	High
High Priority Site-Specific Recommendations		
1-3. Swamp Creek Regional Park Wetland and Stream Restoration	King County/Corps	High
5-2. Lower Bear Creek Floodplain and Channel Restoration	Corps/City of Redmond	High

Table 2. Non-Core and Medium/Low Priority Recommendations

Non-Core Recommendations	Potential Lead Implementing Agency	Relative Scale of Cost
P7. Designate Significant Resource Areas Within the Corridor	King County	Minimal
P8. Construct Demonstration Reclaimed Water Production Facility	King County	High
P9. Tightline Stormwater Above Landslide Hazards and Steep Slopes	King County/Cities	Low (primarily regulatory)
P10. Reduce Unauthorized Water Withdrawals	WDOE	Low/Medium
P11. Education and Incentive Program for Property Owners Along the Sammamish River Corridor	King County/Cities	Medium
Medium Priority Site-Specific Recommendations		

1-4. Wildcliff Shores Wetland and Riparian Restoration	City of Kenmore	Medium
2-1. Tributary 0068 Confluence and Upstream Reaches	City of Bothell	Medium
3-1. 405/Hwy 522 Interchange Wetland and Riparian Restoration	City of Bothell	Medium
3-2. Side Channel/Wetland Restoration Near Gold Creek	King County	Medium
3-3. Minor Tributaries, Reach 3	City of Woodinville	Medium
4-2. Minor Tributaries, Reach 4	City of Redmond	Medium
4-3. Agricultural Infiltration Basin	King County	Low
4-4. Wetland Restoration Across from Willows Run	City of Redmond	High
4-5. Willows Run Riparian and Wetland Restoration	City of Redmond	Low
5-1. Minor Tributaries, Reach 5	City of Redmond	Medium
6-1. Transition Zone Channel and Riparian Restoration	King County/Corps	High
Low Priority Site-Specific Recommendations		
1-1. Sammamish River Mouth Wetlands	King County	Low
1-2. Lakepointe Property Riparian and Shoreline Restoration	Private Developer	Medium
2-2. Right Bank Wetland and Riparian Restoration in Bothell	City of Bothell	Medium
2-3. Side Channel at 102nd Avenue	King County	Medium
4-1. Small Meanders in Reach 4	King County	Medium/High

Finally, a research, monitoring and adaptive management plan is presented that details a program of research and monitoring to determine how successful various restoration alternatives are at achieving the expected benefits and further research to enable additional alternatives to be implemented. Research focuses primarily on additional temperature and groundwater studies to learn where heating occurs in the tributaries, and locate potential groundwater sources to be utilized in creating thermal refuges. Additionally, aquatic habitat features that are proposed will be monitored extensively and constructed in phases as information is collected to determine where and what types of features are most effective. The monitoring of this Action Plan should be conducted as a Corridor wide program that individual jurisdictions would contribute funds towards from

their individual projects, rather than having a mix of small scale monitoring programs for each site. This will more readily allow population level responses to be detected and allow funds to be used more effectively to monitor many sites throughout the Corridor.

It is expected that implementation of these recommendations will take at least 10 years and cost more than $20 million to implement all of the recommendations. However, when it is accomplished, the Sammamish River Corridor will have been changed into a functioning migratory corridor with significant areas of habitat for juvenile salmon rearing and wildlife. This Action Plan can be a major component of salmon recovery in the Greater Lake Washington Watershed.